

surface mining /

silviculture



SUMMARY SHEET

category

WATER QUALITY

sub-category

SURFACE MINING/
SILVICULTURE

BMP

SURFACE
MINE
MANAGEMENT

OBJECTIVE

To reduce, to the maximum extent possible, any negative impact of surface mining operations on surface and groundwater resources. The greatest progress can be made by organizing BMP's and incorporating them into the Soil Erosion and Sediment Control Plan which now must be reviewed by the Soil Conservation District.

WHERE APPLICABLE

These general practices should be applied to any site currently existing or being developed as a surface mining operation.

PROS

1. These measures, when implemented, will greatly reduce the amount of sediment in stormwater that results from exposing large areas of soil.
2. The Soil Conservation District can have direct input into ensuring an effective soil erosion control system.

CONS

1. The main disadvantage of applying these practices to surface mining operations will be realized by the operator in the form of the cost of installing stormwater control structures. The fact that every operator must comply, regardless of the municipality where the operation is located, means that one is not restricted more than another.

IMPLEMENTATION CONSIDERATIONS

The basic requirements of the regulations on surface mining operations are as follows:

1. Sequence of Construction - The proper sequencing of construction and phasing should be noted on the plan. Roads, curbs, utilities and the estimated duration of each phase should be specified.
2. Tracking - The plan should indicate means by which off-site tracking of sediment by construction vehicles will be controlled during all phases of construction.
3. Temporary stabilization - All exposed surfaces that are created as a result of construction should receive temporary stabilization. Temporary seeding mixtures and rates along with lime and fertilizer recommendations should be detailed and noted on the plan. Mulching specifications and packing should be included for application during non-seeding dates.
4. Permanent stabilization - All exposed areas which are to be permanently vegetated should be seeded within 10 days of the final grading. Permanent seeding mixtures and rates along with lime and fertilizer recommendations should be detailed and noted on the plan. Mulching specifications and packing methods should be included for application during non-seeding dates.
5. Stockpiling - All stockpiled areas should be located in plain view on the plan. The means by which stockpiles will be stabilized should be specified on the plan. If excess material is to be removed from the site it should be so stated.
6. Disturbed limits - To the maximum extent possible, all vegetated areas not needed for construction should be left undisturbed for as long as possible.
7. Written notification - The Soil Conservation District should receive written notification before the initiation of any disturbance.

a

SURFACE MINE MANAGEMENT

The following practices should be implemented where needed and, if their application is intended, they should be delineated on the plan:

1. Pipe outlets - Pipe outlet discharge and velocities should be calculated and noted. Adequate outlet protection should be provided and noted on plan view where velocities are expected to be erosive.
2. Rip-rap - The length of the rip-rap structure and the size of the stone to be used should be noted. Rip-rap can effectively stabilize steep slopes.
3. Diversions - Diversions slow runoff and direct it to detention or retention facilities. Any diversions should be located in plan view and cross section on the plan.
4. Grassed waterways - Grassed waterways are used to transport stormwater so as to maximize the reduction of velocity and the rate of infiltration. These structures should also be located in plan view, cross section, and profile, and included in the plan.
5. Sediment basins - Sediment basins collect stormwater and allow solid particles to settle out of solution. These structures should be located in plan view, cross section and elevation, and the principal spillway, emergency spillway and dam should be shown in elevation as well.

In addition to the information recommended above, the following should be provided:

- A. Design Calculations
 - B. Clean-out elevations
 - C. Riser details
 - D. Outlet protection, if necessary, and a statement regarding stabilization of the dam.
6. Steep slopes - Slopes greater than 3.1% should be stabilized, seeded and mulched immediately after grading.
 7. Agricultural lands - If the surface mining operation is located near agricultural lands there must be some means of protecting cultivated areas during their idle periods once construction on the mine site begins (i.e. temporary seeding) and after the last crop is harvested. In addition, if the situation arises where tile drains are necessitated, the system should be incorporated into existing tile or surface drainage systems so as not to interfere with the drainage conditions of the adjacent or proximate agricultural lands.

The cost of implementing and maintaining the erosion and sediment control plan will depend on the kinds of control methods needed and their dimensions and numbers. Information on unit pricing can be obtained at the county Soil Conservation District. General maintenance measures are 1) install perimeter control measures prior to clearing and grubbing, 2) avoid exposure of soils on steep slopes, 3) avoid clearing too far above highwall or below outcrop line, 4) minimize length of time that soil is exposed by clearing or grubbing, 5) carefully site and protect stockpiled topsoiling material, and 6) avoid the creation of a soil surface which impedes infiltration and/or concentrates surface runoff (e.g. zipper marks or dozer cleat marks that run up and down slope rather than along contour).

Implementation is the responsibility of the operator, and the compliance with the requirement of a erosion and sediment control plan is mandated by New Jersey state law.

For Additional Information

1. The Soil Conservation District, Rt. 206, Andover Township, R.D. 7, Box 13, Newton, N.J. 07860. (201) 383-7315.

b

category

SUMMARY SHEET

sub-category

WATER QUALITY

BMP

SURFACE MINING /
SILVICULTURE

WOODLAND
MANAGEMENT

OBJECTIVE

To improve woodland management operations by minimizing erosion, siltation and water quality contamination.

WHERE APPLICABLE

All woodlands that are harvested.

PROS

1. The use of practical and common sense practices for the management of woodlands will not only maintain the quality of the surface and groundwater, but accentuate the aesthetic quality of a valuable resource.
2. Makes operation more economical in the long run.

CONS

1. The necessity to change some management habits may involve some additional time at the outset, but will prove much more profitable in the long run, as the life of the stand will be prolonged, and the quality of the trees and water maintained.

IMPLEMENTATION CONSIDERATIONS

Harvesting activities need to be properly planned and implemented to prevent water contamination. The following considerations should be incorporated into the harvesting plan.

1. Stream Crossings
 - a) try to avoid stream crossing if possible
 - b) look for previous crossings and use them if necessary to cross
 - c) new crossings should have low, stable banks, a firm stream bottom, and gentle slopes along the approaches
 - d) use temporary culverts where necessitated
2. Stream Bank Protection
 - a) avoid cutting trees/vegetation on stream banks since they help keep the bank in place and provide shade.
 - b) do not skid up and down stream channels (active or intermittent)
 - c) keep skidders back from the water, winch off logs that are close to banks
 - d) fell trees so tops land away from streams to keep debris and skidders out of the water and further from the banks
 - e) leave buffer strips around streams, lakes and ponds undisturbed
 - f) properly place skid trails so as to minimize disturbance of soil
 - g) schedule logging during driest periods of the year
3. Steep Slopes
 - a) minimize activity in steep slope areas
 - b) winch off logs and minimize skid trails in steep slope areas
 - c) if steep slopes can't be avoided, regrade and install diversion devices in these areas to minimize erosion
4. Skid Trails/Roads/Landing - Location
 - a) keep away from wet or poorly drained areas, and tops and toes of banks and slopes
 - b) avoid sharp curves

a

WOODLAND MANAGEMENT

- c) set roads at least 100 to 150 feet back from streams, ponds, and marshes (200 feet for landings)
 - d) reseed if necessary when done
 - e) use care when skidding to protect understory vegetation
 - f) put in diversion devices if necessitated
 - g) use winch as much as possible
5. Waste Products
- a) keep petroleum products away from water bodies - take wastes off - site
 - b) pick up litter, oil cans, lunch wrappers, broken cables and other waste products daily
6. Education
- a) emphasize the above to crew members/machine operators

For Additional Information

- . N.J. Forestry Association, N.J. Chapter
Society of American Foresters
P.O. Box 304
Pennington, N.J. 08534
- . N.J. Bureau of Forestry
CN 028
Trenton, N.J. 08625
- . U.S. Dept. of Agriculture
Soil Conservation Service
Hackettstown, N.J.
- . Area Forester
NJ Bureau of Forest Management
RD 1, Box 999
Franklin, New Jersey 07416

b